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ABSTRACT OF PATENT SPECIFICATION No. 84429/75

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The claim in this abstract is in the form in which it was lodged
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Application 1st September, 1975, ANDORSEN, J.P.,
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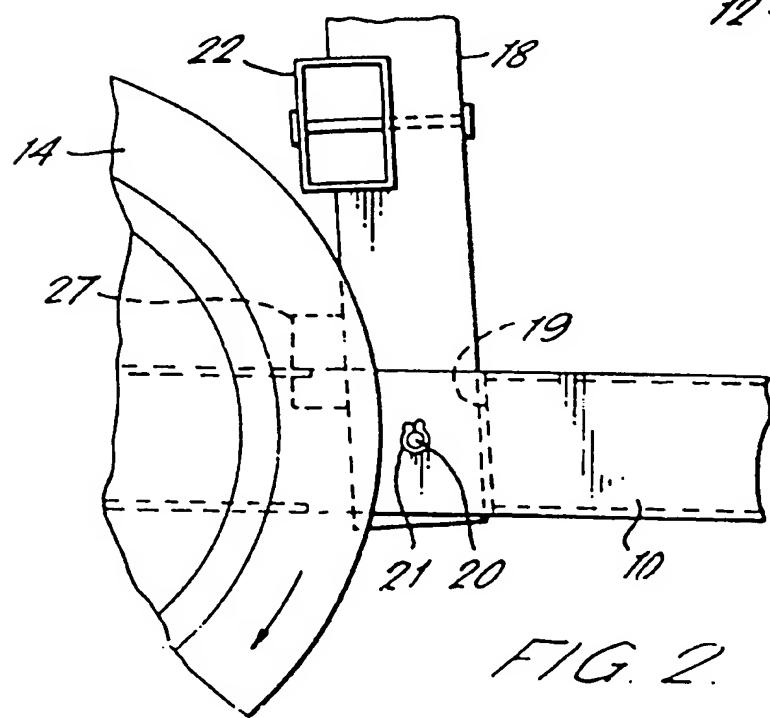
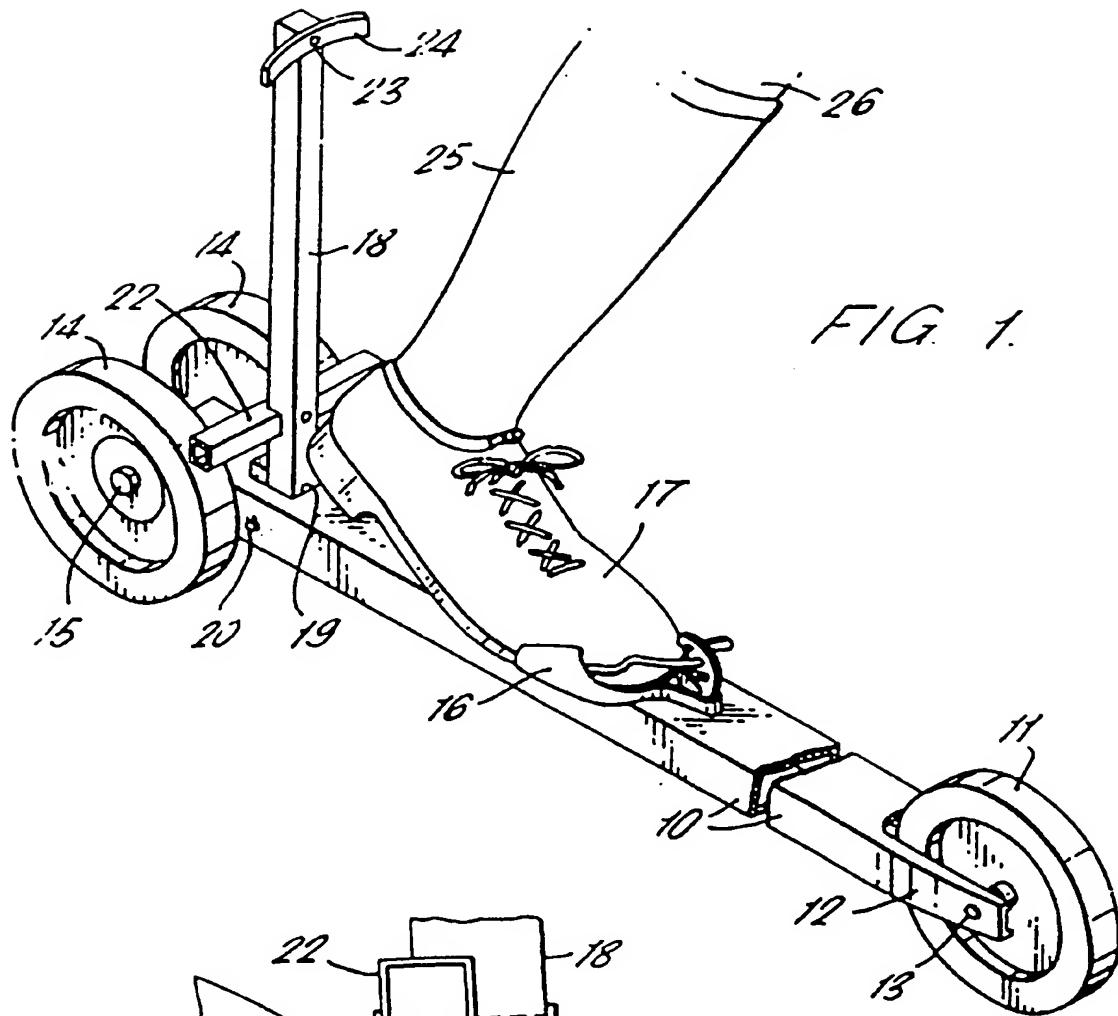
Int. Cl.² A63C 17/14.

ROLLER FOOTWEAR WITH BRAKE

Claim 1. A roller footwear device which comprises two sets of wheels each of which includes at least one wheel, said sets being arranged spaced apart from each other on parallel axles mounted on a web supporting a foot fastening means as well as brake means arranged to act directly on at least one wheel or indirectly by action against means connected to at least one wheel and rotatable therewith and release means for activating the brake means, said release means being operatively associated with said brake means via intermediate actuation means so arranged as to cause said release means to activate said brake means by action from the leg region (regio cruris) or knee region (regio genu) of the wearer of said device by movement of said region substantially at right angles to the axles of the wheels starting from a position adopted by said region during normal operation of said device.

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COMPLETE SPECIFICATION

(ORIGINAL)

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Lodged :

Complete Specification Lodged :

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Related Art



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Complete Specification for the invention entitled

This invention relates to roller footwear devices, such as roller skis and roller skates.

In road traffic on roller skis and roller skates, it is desirable to be able to effect controlled braking, primarily in order to avert mishaps, such as collisions, running down pedestrians and driving off the established roadway. This applies especially to road traffic in undulating terrain. Different arrangements are known for braking roller skis involving, for example, release by hand or with a ski pole. Common to this type of braking arrangement is that a certain time is required to effect braking. The release with a ski pole is, moreover, difficult to carry out especially in a critical situation where rapid braking is necessary. A common disadvantage with these braking arrangements is that they place a restriction on the movement of at least one arm which ought to be free so that the runner can preserve his or her balance.

Braking arrangements are also known based on release or application by the runner's heel, for example, by twisting to the side relative to the normal position. However, the freedom of movement is small for this portion of the body and it can be reduced still further in an awkward situation where rapid braking is essential.

The main object of the invention is, therefore, to provide roller footwear devices, and more especially roller skis, embodying brake means not burdened with the aforesaid disadvantages and which, in addition, are light in weight and simple to manufacture. Moreover, the brake means must occupy little space so as not to create problems in the transportation and storage of the device.

According to the present invention a roller footwear device comprises a web, foot fastening means and brake means supported by said web parallel axles spaced apart from each other on said web and each carrying one of two sets of wheels each consisting of at least one wheel and release means for activating the brake means which are arranged to act on at least one wheel, said release means being operatively associated with said brake means via intermediate actuation means so arranged as to cause said release means to activate said brake means by action from the leg region (regio cruris) or knee region (regio genu) of the wearer of said device by movement of said region substantially at right angles to the axles of the wheels starting from a position adopted by said region during normal operation of said device.

It has now been recognised that the portions of the human body mentioned in the last-preceding paragraph can be moved relatively freely about the ankle joint, not only in the sagittal plane but also in the transverse plane. In the sagittal plane, the leg has a sector of movement of about ninety degrees. Under normal circumstances, on roller skis, there is a sector of movement of about thirty degrees of the rearmost portion of the turn and a somewhat smaller sector of the foremost portion of the turn which are not utilised. This movement possibility and partially also the transverse movement can be employed for actuating the release means.

It is especially advantageous to arrange the release means so that on activation, it is moved against the direction the roller ski, for example, is moved in. In this way, there is utilised a relatively large free area of movement on moving the leg to the rear.

In order that the invention can be more readily understood, convenient embodiments thereon will now be described, by way of example, with reference to the accompanying drawings in which:

5 Fig. 1 is a perspective view of a roller ski according to a first embodiment, having two rear wheels and one at the front and showing the runner's leg in the operative position,

10 Fig. 2 is a vertical section on an enlarged scale through a portion of the roller ski of Fig. 1 and showing the
brake means activated,

Fig. 3 is a perspective view of a portion of a roller ski according to a second embodiment,

15 Fig. 4 is a perspective view, on a larger scale, of a section of the roller ski of Fig. 3 with the release strap in the transportation position, and

Fig. 5 is a perspective view of an alternative form of release strap.

The invention is described below in connection with a single roller ski. It should be clear that roller skis are produced and used in pairs with most parts alike, while some parts can be designed or disposed symmetrically relative to the sagittal plane of the runner. In the figures, two right skis are illustrated but it should be apparent from this that what is shown applies equally well to left skis.

25 Referring to Figs. 1-4, there is illustrated a ski with a support or web 10 in the form of a beam of hollow, aluminium profile of rectangular cross-section, in which a single front wheel 11 is located between fork ends 12 by means of an axle 13 while two rear wheels 14 are located one on each side of the web 10 with an axle 15 which extends parallel to the axle 13.

The wheels 11 and 14 can be of conventional design, for example, having a free wheel hub, a rim and a rubber track. On the web 10, there is secured a binding 16 for the runner's shoes 17 (Fig. 1), in this instance a right binding.

5 In Figs. 1 and 2, there is illustrated a first embodiment in which there is mounted in an opening 19 in the web 10 and just in front of the rear wheels 14, an upwardly projecting rod 18 of hollow profile. The mounting is effected by way of an axle 20 which is led through the web 10 approximately parallel to the axle 15 and held secure by a safety ring 21 (fig. 2) on each end of the axle projecting outside the web 10. The rod 18 supports two arms 22 which, for example, can be permanently welded and which project outwards on opposite sides of the rod radially outside the track of their respective one of the two rear wheels 15.

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15 Arms 22 which constitute the brake means are formed from a material which is sufficiently resistant to wear and provides sufficient friction to give a satisfactory braking effect. Alternatively, the arms can be replaceable or can be provided with an exchangeable friction coating (not shown).

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At the upper, free end of the rod 18, there is secured with a screw 23, a release means in the form of a transverse rail 24 at the height of the rear side of the runner's leg 25 (regio cruris anterior). Preferably, it is positioned behind the most powerful muscular region of the leg but it can also lie behind the knee region of the runner (regio genu anterior) 26 or behind the lower part of the leg 25.

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The forward movement of the rod 18 is limited by the edge of the opening 19 in the web 10. In order to lead it back to the rest position after activation and retain it in

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alignment with this edge, there is introduced on the opposite side of the opening 19 a block 27 of rubber or another elastically deformable material. In the rest position, the rod 16 forms an angle of at least ninety degrees with the front-lying portion of the web 10. In a modification of this embodiment, the rod can be divisible in order to simplify transportation of the roller ski.

In Figs. 3 and 4, there is illustrated a second embodiment in which the rod 16 and the rail 24 of the first embodiment described above are replaced by an approximately U-shaped strap 28 which is disposed with its stem 29 directed upwards relative to the web 10 and with ends 30 secured to the shaft 10 externally on the web 10. At the inner side relative to the runner, the uppermost portion of the strap 28 is curved somewhat outwards as shown at 31. The purpose of this curve 31 is to provide a larger extension to the breadth of the stem so as to provide for the possibility of release over a larger area of movement in a transverse direction.

Together with the strap 28, referred to below as the release strap, there are mounted on the shaft 20, the free ends of a second approximately U-shaped strap 32 which is substantially shorter than the release strap 28 and which is positioned with its stem directed up between the release strap 28 and the rear wheels 14. Strap 32, which is referred to below as the brake strap, carries a crosswise-extending bolt 33, the outwardly projecting ends of which serve as brake means and the central portion of which serves as an anchor for a stop screw 34 which extends rearwardly to an through a permanent bracket 35 fixed to the upper side of the web 10. The screw 34 carries a screw spring 36 which acts

between the bracket 35 and the bolt 33 and pushes the brake strap so far forwards and away from the rear wheels as the screw 34 permits. This force can be regulated by a wing nut 37 on the screw 34. The release strap 28 is freely mounted relative to the brake strap 32 but its legs will thrust against the bolt 33 externally of the brake strap, that is on the outwardly projecting ends thereof. The release strap 28 can be secured in this abutment position (fig. 3) by way of a detachable clamp spring 38 which is mounted with one leg to a corresponding one of the legs of the release strap 28 and which is provided with a hook 39 which can be led down behind the stem on the brake strap 33. When it is released from the brake strap 33, the release strap 28 can be pivoted down towards the web 10 as shown in Fig. 4.

In a modification of the embodiment of Figs. 3 and 4, the free ends of the approximately U-shaped release strap 28 are mounted on the shaft 20 within the free ends of the approximately U-shaped brake strap and braking is effected when lower portions of the arms of strap 28 bear directly against the stem of the brake strap causing curved end portions of said stem to bear against the rear wheels 14.

In Fig. 5, there is illustrated an alternative form of release means which can be utilised in the roller ski of Figs. 3 and 4. Secured to the stem of the release strap is a closed, elliptical strap 40 of rigid material, for example, metal wire, which is designed to surround the leg 25 of the runner (fig. 1) with the possibility for free movement during normal operation but which can also be actuated by the front edge of the leg 25 or by the knee 26 when the leg is moved

forwards beyond the normal operative movement. With a simple cord pull backwards from the stem of the release strap 28, the brake strap 32 can also be drawn backwards when the release strap is led forwards. The design of such a cord
5 pull or a corresponding mechanism can be of conventional form and will, therefore, not be described further here. The strap 40 can alternatively be dimensioned for securing around the runner's leg but then there must be inserted an appropriate elastic means in the transmission to the brake strap which permits unhindered movement during normal operation of the roller ski. The design will make it possible for the runner to bring about braking by movement of the leg both forwards and backwards from the region which is utilised in normal operation and, moreover, by movement in a certain sector away
10 from these directions.
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The embodiments described above are in connection with roller skis. However, the invention can also be adapted for use with roller skates. It is also possible to allow the brake means to act on the front wheel or on a disc which is connected to the end front wheel or rear wheel so as to
20 rotate therewith.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A roller footwear device which comprises two sets of wheels each of which includes at least one wheel, said sets being arranged spaced apart from each other on parallel axles mounted on a web supporting a foot fastening means as well as brake means arranged to act directly on at least one wheel or indirectly by action against means connected to at least one wheel and rotatable therewith and release means for activating the brake means, said release means being operatively associated with said brake means via intermediate actuation means so arranged as to cause said release means to activate said brake means by action from the leg region (regio cruris) or knee region (regio genu) of the wearer of said device by movement of said region substantially at right angles to the axles of the wheels starting from a position adopted by said region during normal operation of said device.
2. A device according to claim 1, wherein on activation the release means is arranged to move against the direction in which the roller device is to move in.
3. A device according to claim 1 or 2, wherein the intermediate actuation means comprises at least one arm with which the release means is associated, said arm or arms being mounted on the web behind the foot fastening means to project upwardly from said web at an angle to the forwardly directed portion of the latter which is at least 90 degrees and being pivotable about an axis substantially parallel to the axes of the wheels, said brake means being supported directly by said arm or arms or being acted upon thereby on pivoting said arm or arms.
4. A device according to claim 3, wherein the intermediate actuation means comprises two arms joined at their upper ends

by a release means-forming stem to form an approximately U-shaped member and at their lower ends pivotably mounted on an axle extending through the web.

5. A device according to claim 3 or 4, wherein the brake means is mounted on a support element pivotable about an axis coinciding with or disposed closely up to the pivotal axis of the arm or arms of the intermediate actuation means, the brake means being capable of being swung towards and away from a rear wheel and the arm or arms being arranged to thrust directly against the brake means or its support element on operating the release means.

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15 6. A device according to claim 3 when not dependent on claim 2, wherein the intermediate actuation means comprises two arms joined at their upper ends by a stem to form an approximately U-shaped member and at their lower ends pivotably mounted on an axle extending through the web, said stem having a leg-enclosing and release means-forming rigid cord projecting substantially horizontally therefrom above the web and permitting free movement of said leg during normal operation of the device, said cord being operable by a forward movement of the leg or knee beyond its normal operative movement, and means for translating the forward movement of said cord into a rearward movement of said brake means.

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25 7. A device according to any one of the preceding claims, wherein the device is a roller ski or roller skate.

8. A device according to claim 7, wherein the roller ski has a front set of wheels consisting of a single wheel and a rear set of wheels consisting of two wheels.

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9. Roller footwear devices as claimed in claim 1 and substantially as described herein with particular reference to

Figs. 1 and 2 or Figs. 3 and 4 or Fig. 5 of the
accompanying drawings.

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DATED THIS 29TH DAY OF AUGUST, 1975

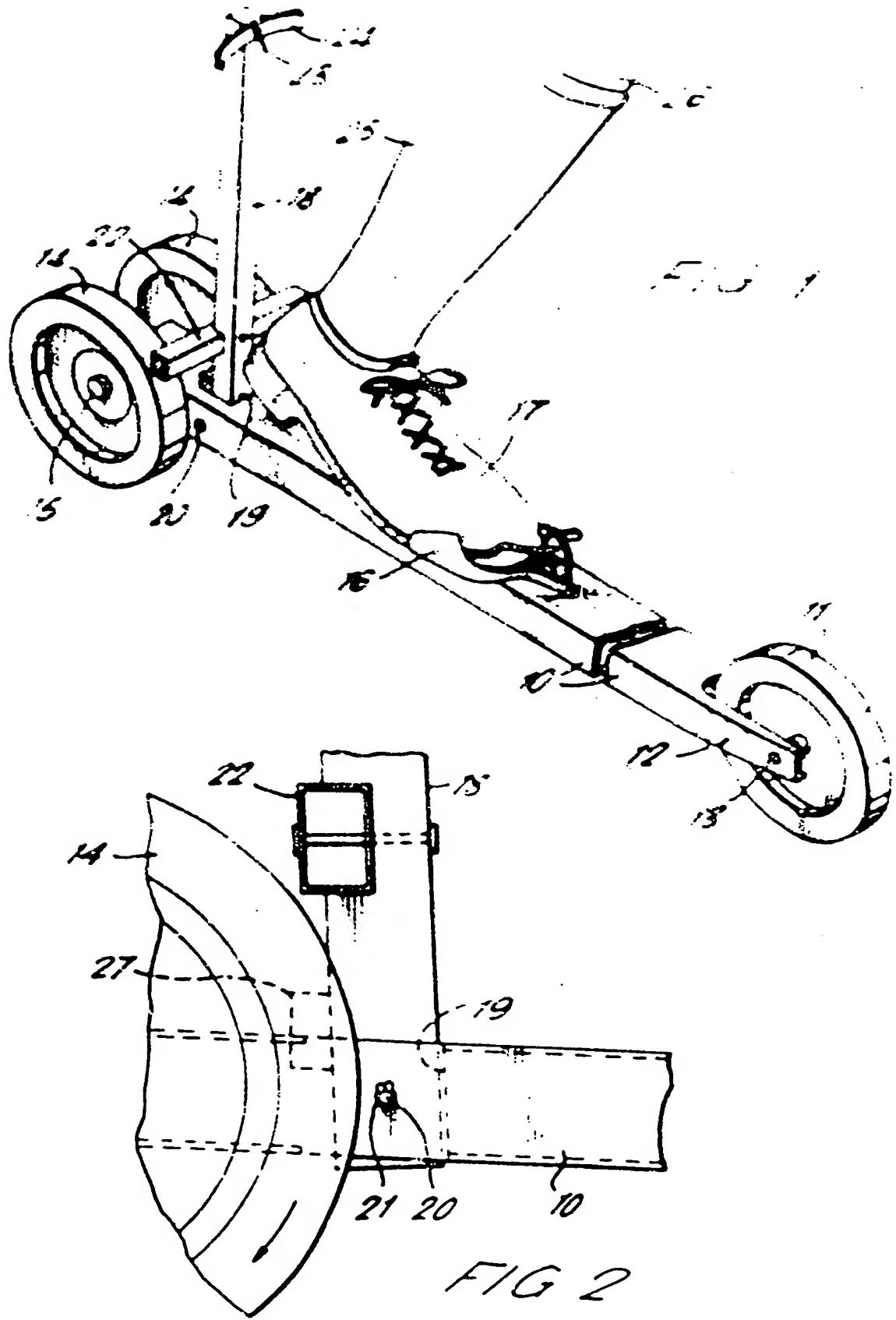
JOHN PETER ANDORSEN, HELGE REVHAUG AND
OLE NYBERG
By Their Patent Attorneys

CLEMENT HACK & CO.
Fellows Institute of Patent
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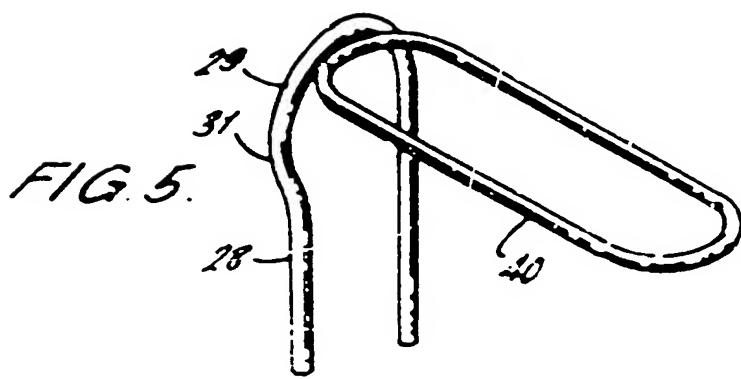
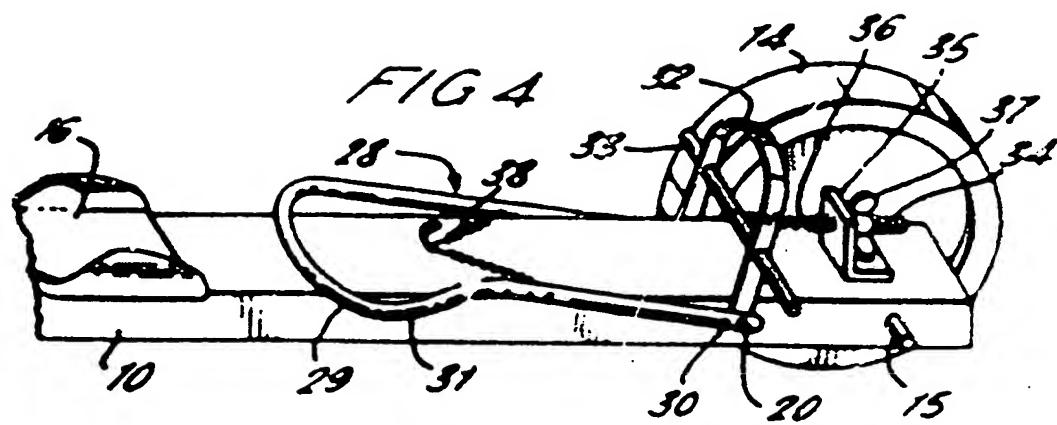
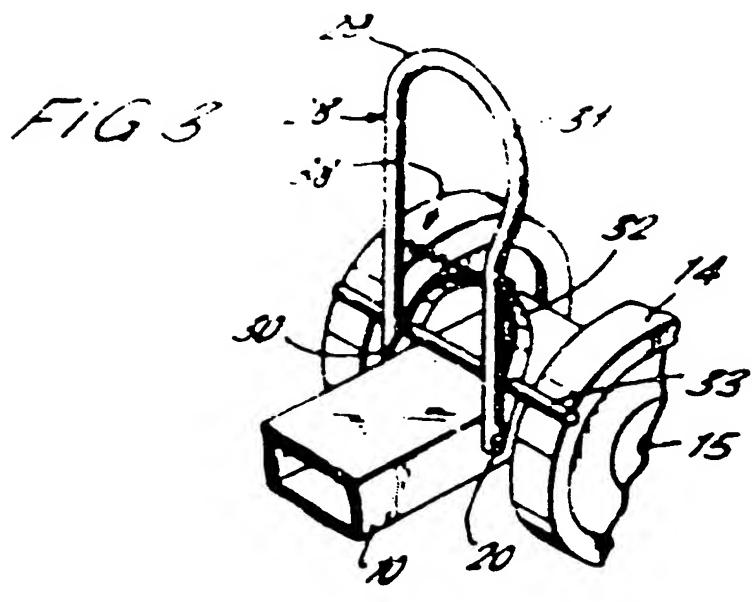
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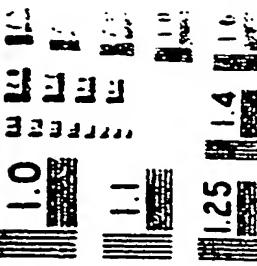
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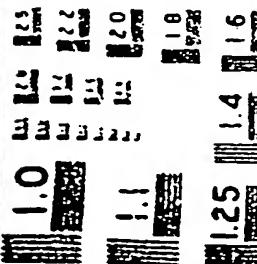
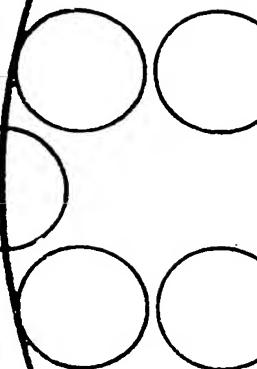


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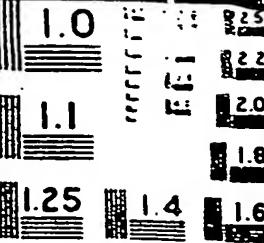
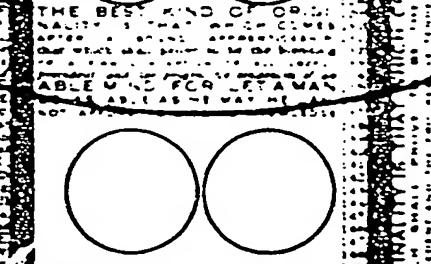
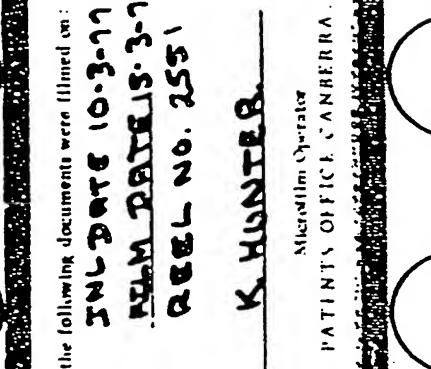
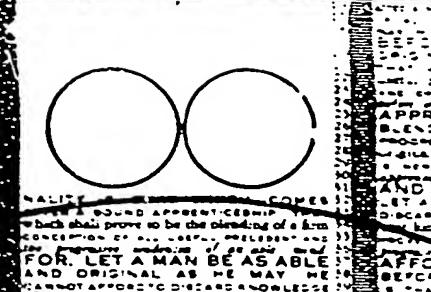


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